

REMARKS

Claims 1-3 presently are pending in the application. New claim 3 has been added by this Amendment. Reconsideration and allowance of all claims are respectfully requested in view of the following remarks.

The Examiner has kindly acknowledged the claim for foreign priority under 35 U.S.C. § 119, as well as receipt of the certified copy of the priority document.

The Examiner has also returned an initialed copy of the Form PTO-1449 thereby indicating that the Examiner has considered the references.

Applicant has reviewed the specification and has made the editorial corrections as set forth in the attached Appendix.

Claims 1 and 2 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 5,803,388 (Saliba et al.). Further, claims 1 and 2 are rejected under § 102(b) as being anticipated by JPA2000-243054 (hereinafter JPA '054). JPA '054 is commonly owned by Fuji Photo Film Co., Ltd. For the following reasons, these rejections are respectfully traversed.

An apparatus consistent with the present invention relates to a tape reel comprising a hub 11 having a cylindrical shape; and an upper flange 12 and a lower flange 13 respectively provided at an upper end and a lower end of the hub. A magnetic tape is wrapped around an outer peripheral surface of the hub, and as the magnetic tape is being wrapped around the hub, a distance between the upper flange and a lower flange becomes gradually decreased outside an outer peripheral surface of the hub.

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In the rejection of claims 1 and 2 under § 102(b) involving U.S. Patent 5,803,388 (hereinafter "Saliba"), the Examiner maintains that Saliba teaches all the recitations of the claims including the fact that as the magnetic tape 60 is being wrapped around the hub, a distance between the upper flange and the lower flange becomes gradually decreased outside an outer peripheral surface of the hub due to radial force exerted against the hub as shown in Figs. 4b and 7, and as described in col. 4, lines 25-39.

Saliba relates to a tape reel with flange sections to provide for a uniform tape stacking. More specifically, as each loop of tape is wound on the hub and the amount of tape stacked thereon increases, radial sections of the flanges are deflected towards each other and against opposite edges of the tape stack, ensuring that the tape stacks uniformly.

Saliba recognizes that when tape spools on a reel, there is a tendency for air to be trapped between the outer surface of the wound tape and the incoming tape. Trapped air is said to contribute to the tendency for the tape to be wound non-uniformly.

To address this problem, Saliba discloses that the flanges 20 and 30 include radial sections 27 and 37 which are deflectable about the hub 50 and contact the tape edges to ensure uniform stacking as the tape is spooled on the hub (see col. 3, lines 53-56). Fig. 7 illustrates the deflection of radial sections 27 and 37 against the tape 60 edges as radial force is exerted against the hub 50 by a full stack of spooled tape.

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The Examiner further rejects claims 1 and 2 under § 102(b) as being anticipated by JP '054. In particular, the Examiner alleges that JP '054 discloses all of the recitations of claims 1 and 2, including the fact that as the magnetic tape is being wrapped around the hub, a distance between the upper flange and the lower flange becomes gradually decreased outside an outer peripheral surface of the hub (referencing Figs. 1-4).

Although the Examiner apparently relied on the English Abstract and drawings of JP '054, JP '054 relates to U.S. application number 09/913,612. Accordingly, Applicant is providing the Examiner with a copy of the English specification so that the Examiner may obtain a complete understanding of the reference.

In any case, JP '054 fails to teach or suggest a tape reel being constructed in such a manner that a distance between the upper and lower flanges outside the outer peripheral surface of the hub is gradually decreased, as a magnetic tape is being wrapped around the hub.

On the other hand, in col. 4, lines 49-54, Saliba discloses that the inner surfaces 27a and 37a are separated by distance S2 of approximately 0.512 in a state where a full stack of tape is spooled on the hub as shown in Fig. 7. Saliba further discloses that "the rest of the flanges 20 and 30 do not contact the tape stack." Thus, the inner surfaces 20a and 30a, of the flanges 20 and 30, remain separated, at the outer diameter, by the distance S1 at approximately 0.694 inches.

Claim 1 has been amended to recite --means for gradually decreasing a distance between said upper flange and said lower flange outside an outer peripheral surface of the hub, as said magnetic tape is being wrapped around said hub, by deflecting said upper and lower flanges

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towards each other over an entire circumference thereof--. Because the recitation is a means-plus-function recitation, the Examiner must give patentable weight to the function of the claim. In this case, the function clearly specifies that the upper and lower flanges deflect towards each other over an entire circumference thereof, whereas Saliba specifically discloses that only the radial sections 27 and 37 deflect.

Applicant has further added a new dependent claim 3 which further defines the present invention. Claim 3 is patentable for the reasons noted above with respect to independent claim 1, as well as being separately patentable for the recitations set forth therein. More specifically, new dependent claim 3 further specifies a distance between an upper end of an outermost layer of the magnetic tape in a width direction and a lower face of the upper flange being defined as H3, and a distance between a lower end of the outermost layer of the magnetic tape in the width direction and an upper face of the lower flange being defined as H4, the distances H3 and H4 always remaining within a certain range such that the magnetic tape does not contact either of the upper and lower flanges (see, for example, Fig. 3 and page 9, line 13 through page 10, line 11 of the subject application).

In contradistinction, Saliba discloses that "as more tape is stacked on the reel, radial sections 27 and 37 are deflected closer towards each other and against opposite edges of the stack of tape" (see column 4, lines 37-39).

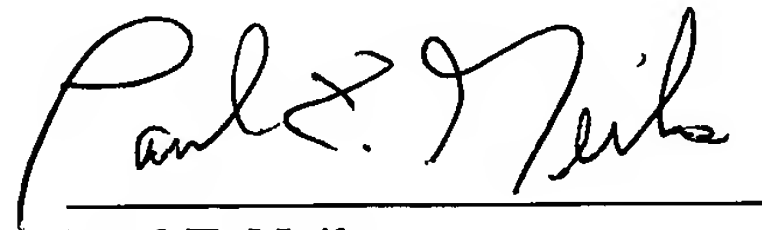
In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

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Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

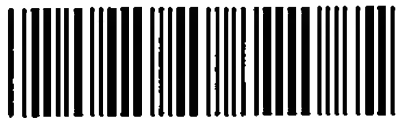
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PATENT TRADEMARK OFFICE

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APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The specification is amended as follows:

Page 1, delete the first full paragraph and insert the following paragraph:

The present invention relates to a tape reel to be applied to a magnetic tape cassette[,] and, more particularly, to the tape reel having an upper flange and a lower flange provided at an upper end and a lower [ends] end of a hub, respectively.

Page 1, delete the second full paragraph and insert the following:

Conventionally, there have been various types of [the] magnetic tape cassettes for a video, for an audio apparatus, for a computer, etc. Some of the magnetic tape cassettes for [the] [video] videos, for example, are constructed such that a pair of tape reels is contained in a cassette case consisting of an upper cassette half and a lower cassette half. The pair of tape reels each has a hub, an upper flange and a lower flange. A tape reel rotates in a state where a magnetic tape has been wrapped around an outer periphery of the hub.

Page 2, delete the second full paragraph and insert the following paragraph:

As the magnetic tape has been made thinner, deformation of the magnetic tape in a width direction thereof has become likely to happen. For example, on occasion of high-speed running or acceleration or deceleration of the magnetic tape in a recording and reproducing apparatus, the magnetic tape may [be] sometimes be deformed in the width direction. In addition, the magnetic tape may [be] sometimes be locally brought into tight contact with guide rollers or the like. That results in the occurrence of curving[,] or weaving of the magnetic tape. Moreover, due to the deformation of the magnetic tape, the ends of the magnetic tape in the width direction may come in contact with the lower face of the upper flange and the upper face of the lower flange, resulting in occurrence of the abrasion powder. This abrasion powder will incur an increase of dropouts. Particularly, when an amount of the magnetic tape wrapped around the hub is small, there will be a long distance from outer circumferential edges of the upper and the lower flanges to a face of the most outer layer of the magnetic tape already wrapped. Therefore, it is difficult to move the magnetic tape for this long distance without a hard or forceful contact [hardly] with the lower face of the upper flange and the upper face of the lower flange in the width direction. If the magnetic tape comes in forceful contact [hardly] with one of the lower face of the upper flange and the upper face of the lower flange on this occasion, the ends of the magnetic tape may be damaged, or abrasion powder may occur.

Page 3, delete the first full paragraph and insert the following paragraph:

In the meantime, as the tracks of the magnetic tape have been made narrower, a so-called “[a] linearity defect,” [that] wherein reproduction output power at the deformed portion of the tape becomes lower than that at a rectilinear portion, has become likely to occur. Even with a minute deformation of the tape, [it may occur] the linearity defect may occur. The above described weaving of the magnetic tape will incur an increase of the linearity defects, that is, will incur an increase of fluctuations in the reproduction output.

Page 3, delete the second full paragraph and insert the following:

Further, a so-called “[an] irregular wrapping” is likely to happen, as the magnetic tape has been made thinner. For example, as shown in Fig. 5, which is an enlarged perspective view of a part A in Fig. 4, a portion of the lateral end of the magnetic tape may jump out from a plane composed of the other lateral ends of the magnetic tape in the width direction. As shown in Fig. 5, the [jumped out] portion 120a of the end of the magnetic tape that has jumped out is deformed so as to meander. When the magnetic tape has been deformed, normal recording and reproduction cannot be expected. Therefore, it is an extremely important problem to prevent such an irregular wrapping.

Page 5, delete the first full paragraph and insert the following:

The invention has been made in [a] view of the above described circumstances, and its object is to provide a tape reel wherein a magnetic tape can be smoothly wrapped around a hub without incurring damage of the magnetic tape and occurrence of abrasion powder and an irregular wrapping. Its object is also a method of wrapping the magnetic tape around the tape reel.

Page 5, delete the second full paragraph and insert the following paragraph:

According to the invention, a tape reel comprising a hub shaped in a cylindrical shape around which a magnetic tape is adapted to be wrapped, an upper flange and a lower flange respectively provided at an upper end and a lower end of the hub is characterized in that the tape reel includes means for gradually decreasing [is constructed in such a manner that, as the magnetic tape becomes going to be wrapped around the hub,] a distance between the upper flange and the lower flange outside an outer peripheral surface of the hub, as the magnetic tape is being wrapped around the hub, by deflecting said upper and lower flanges towards each other over an entire circumference thereof [is gradually decreased in the outside from an outer peripheral surface of the hub].

Page 5, delete the third full paragraph and insert the following paragraph:

Further, according to the invention, a method of wrapping a magnetic tape around a tape reel wherein the tape reel comprises a hub shaped in a cylindrical shape around which the magnetic tape is adapted to be wrapped, an upper flange and a lower flange respectively provided at an upper end and a lower end [ends] of the hub is characterized in that a distance between the upper and the lower flanges outside an outer peripheral surface of the hub is gradually decreased, as the magnetic tape is [going to be] wrapped around the hub.

Page 6, delete the first full paragraph and insert the following paragraph:

According to the above described structure, as the magnetic tape is [going to be] being wrapped around the hub of the tape reel, a force of tightening the hub (wrapping and tightening force) with the magnetic tape will be increased, and at the same time, the distance between the upper and the lower flanges is gradually decreased. Namely, while an amount of the magnetic tape wrapped around the hub is small, the distance between the upper and the lower flanges is rather large, and the magnetic tape can be moved to a neighborhood of the outer peripheral surface of the hub easily. On the other hand, when the amount of the magnetic tape wrapped around the hub has become large so that an irregular wrapping may be likely to occur, the distance between the upper and the lower flanges is made narrow. Thus, intruded air can be appropriately removed to prevent the irregular wrapping. In [The] addition, deformation of the magnetic tape in the width direction can be also prevented.

Page 8, delete the third full paragraph and insert the following paragraph:

In this embodiment, a width of the magnetic tape 12 is designated as W. A height of the outer peripheral wall 11a of the hub is designated as H1. A distance between the upper and the lower flanges 12, 13 (the distance between the lower face of the upper flange 12 and the upper face of the lower flange 13) is designated as H2 at the most outer circumferential edges of the flanges. A radius of the outer peripheral wall 11a of the hub is designated as R, and a thickness of the outer peripheral wall 11a of the hub is designated as T. A distance from an outer peripheral surface of the outer peripheral wall 11a of the hub to outer circumferential edges of the upper and the lower flanges 12, 13 is designated as L1. As shown in Fig. 3, [A] a distance from the outer peripheral surface of the outer peripheral wall 11a of the hub to the most outer layer of the magnetic tape 20 wrapped around the outer peripheral surface 11a of the hub is designated as L2.

Page 9, delete the second full paragraph and insert the following paragraph:

In this embodiment, as the magnetic tape 20 is [going to be] being wrapped around the outer peripheral wall 11a of the hub, a distance between the upper and the lower flanges 12, 13 at the most outer circumferential edges of the flanges (in an outer direction [way] from the outer peripheral surface of the outer peripheral wall 11a of the hub) is gradually decreased as shown in Fig. 3, the distance is set [setted] as H2'. Specifically, a distance between one of the outer ends (an upper end in the drawings) of the most outer layer of the magnetic tape 20 in a width direction and the lower face of the upper flange 12 is defined as H3. A distance between the

other outer end (a lower end in the drawings) and the upper face of the lower flange 13 is defined as H4. These distances H3 and H4 are respectively always within a certain range.

Page 10, delete the third full paragraph and insert the following paragraph:

According to the tape reel 10 having the structure as described above, as the magnetic tape 20 is [going to be] being wrapped around the outer peripheral wall 11a of the hub, the distance between the upper and the lower flanges 12, 13 is gradually decreased. In other words, while the amount of the magnetic tape 20 wrapped around the outer peripheral wall 11a of the hub is small, the distance between the upper and the lower flanges 12, 13 is rather large. Accordingly, the magnetic tape 20 can be smoothly moved to a neighborhood of the outer peripheral wall 11a of the hub. On the other hand, when the amount of the magnetic tape 20 wrapped around the outer peripheral wall 11a has become large so that an irregular wrapping may be likely to occur, the distance between the upper and the lower flanges 12, 13 is made narrow. Accordingly, the intruded air can be appropriately removed to prevent the irregular wrapping, and at the same time, deformation of the magnetic tape in a width direction of the magnetic tape can be also prevented.

Page 11, delete the first full paragraph and insert the following paragraph:

In addition, in this embodiment, it is preferable to [be] use the [used] numerical values [value] and materials [material] as follows: